bluet, possibly *H. pusilla* Schoepf. 1788, non Hochst. ex. A. Rich. 1847; *H. patens* Ell., 1817, non *Hedyotis patens* Ridley, 1908.

One might question whether such an abbreviated description as Rafinesque gives for the second species can be applied with certainty to *any* species, and if not, therefore, it would be better to reject it as a *nomen dubium* in accordance with Article 63 of the International Rules. The species is not repent with us (it appears so in some well developed specimens), but the rose color of the flowers is very striking and distinctive. When in flower it may be recognized upon sight by this one characteristic. I have not seen a pink-flowered individual that has not proven to be *H. rosea*. It is almost impossible to find the species after the flowers have fallen unless their location is ascertained while they are in flower.

While we may deplore the fact that the description of Rafinesque does not contain more data (in this case it couldn't, since it was merely a translation and a formal naming of a plant described and listed as *Anonyme 2* by Robin), he *did* furnish it with a description that seems to characterize it. Can it, then, be rejected as a *nomen dubium?*

H. rosea has not been previously recorded in the Oklahoma flora. The following sheets are representative: *Trelease*, Poteau, Indian Territory (Oklahoma), Feb. 21, 1901; *Waterfall 9265*, prairie 6 miles north of Stillwater, Payne Co., March 24, 1950; *Waterfall 9267*, around buffalo-wallow in prairie, 5 miles south of Stillwater, Payne Co., March 30, 1950.

The author is indebted to the curators and the librarians of the Gray Herbarium and the Missouri Botanical Garden for the loan of specimens and the copying of descriptions.—U. T. Waterfall, Department of Botany, Oklahoma A. &. M. College, Stillwater, Oklahoma.

Angiosperm Pollen.[1]—Recent trends in taxonomy have included the utilization of more diversified data than formerly. Plant anatomy, cytology, genetics and physiology have become increasingly important areas of investigation for taxonomic purposes. These new approaches have inevitably focused attention upon minute structures of plants

[1] Pollen Morphology and Plant Taxonomy. By G. Erdtman. XII + 537 pages and 261 illustrations. The Chronica Botanica Company, Waltham, Mass. 1952. $14.00.

which are now known to be as useful as many other plant features in indicating relationships and helping with the unraveling of complex taxonomic questions. Pollen has proved to be particularly useful in this connection. Pollen grains are definitive microscopic structures formed in the relatively uniform environment of the enclosed anther. This minimizes the range of variation due to extrinsic environmental factors. Thus, for example, size relationships as well as the more commonly used morphological features are often valuable in phylogenetic studies. The fact that pollen is most commonly shed from the parent plant permits it to be preserved in many instances where the plants themselves have become extinct without leaving any other trace.

The extended studies of pollen, both recent and fossil, have brought to light marked divergencies in pollen form, but these have not always been fully appreciated. The great differences are elegantly brought out in the numerous fine illustrations of the book under review which alone will go far toward elliciting an appreciation of the many remarkable forms and surface features of Angiosperm pollen.

Previous books devoted either wholly or in part to pollen have made no attempt to cover the Angiosperms as a whole. One of the very useful features of Erdtman's book is this coverage. Here one may turn to the material pertinent to a given family of plants and obtain a knowledge of the type or types of pollen found in it. Again, the illustrations are helpful in portraying shapes and obscure features that will assure an accurate interpretation by the reader.

This is definitely a reference book. It is not a textbook. The material in it is organized in a systematic way under the families, which are in alphabetical order. The text is primarily descriptive with only occasional attempts at interpretation and evaluation. Although the title would suggest some kind of application of pollen morphology to taxonomy, this has been done only in a few scattered instances. The rôle of certain types of pollen in phylogeny might have become evident had the families been arranged according to a well known system of classification. However, it is realized that for some purposes an alphabetical arrangement of the families makes the information under each more readily available to a wider audience of readers.

There is introduced a very large and complex terminology concerning the structure and form of pollen that to me seems not wholly justified. At least, I feel sure the ease with which the book may be used by botanists not specializing in pollen studies is considerably reduced thereby. However, on the whole, the book is very well done and will be found useful as a reference in a wide variety of botanical studies. While the price is perhaps understandable, in view of the numerous illustrations, I believe the amount is too great to permit the average botanist, in the United States at least, to own a copy.—R. C. Rollins.

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